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What is Claimed is:

1. A nucleic acid assay for detecting the presence of a specific sample nucleic acid sequence in a sample suspected of the containing the same, said nucleic acid assay comprising:

(a) a matrix comprising at least one first site for receiving an invader oligonucleotide and at least one second site for receiving a probe oligonucleotide;

(b) at least one invader oligonucleotide for attaching to the first site of the matrix, said invader oligonucleotide having an invader nucleic acid sequence for binding to a first portion of the sample nucleic acid sequence;

(c) at least one probe oligonucleotide for attaching to the second site of the matrix, said probe oligonucleotide having a first probe nucleotide portion for binding to a second portion of the sample nucleic acid sequence and a second probe nucleotide portion which does not bind to the sample nucleic acid sequence;

(d) a first disassociating agent for disassociating the second probe nucleotide portion of the probe oligonucleotide from the first probe nucleotide portion upon the concurrent binding of the invader nucleic acid sequence of an invader oligonucleotide to the first portion of the sample nucleic acid sequence and the first probe nucleotide portion for binding to the second portion of the sample nucleic acid sequence; and

(e) detection means for detecting the degree to which the second probe nucleotide portion of the probe oligonucleotide has disassociated from the first probe nucleotide portion thereof.

2. The nucleic acid assay of claim 1 wherein the probe oligonucleotide includes a first label for generating a detectable signal upon the disassociation of the second probe nucleotide portion from the first probe nucleotide portion thereof.

3. The nucleic acid assay of claim 2 wherein the first label of the probe oligonucleotide is selected from the group consisting of fluorescent dyes, fluorescein, rhodamine, cyanine dyes, Alexa dyes, fluorescent dye phosphoramidites, radioactive isotopes and combinations thereof.

4. The nucleic acid assay of claim 2 wherein the first label is operatively associated with the first probe nucleotide portion of the probe oligonucleotide.

5. The nucleic acid assay of claim 4 wherein the first label is attached to the first probe nucleotide portion of the probe oligonucleotide in operative association with a quencher attached to the second probe nucleotide portion of the probe oligonucleotide.

6. The nucleic acid assay of claim 2 wherein the first label is operatively associated with the second probe nucleotide portion of the probe oligonucleotide.

7. The nucleic acid assay of claim 6 wherein the first label is attached to the second probe nucleotide portion of the probe oligonucleotide in operative association

with a quencher attached to the first probe nucleotide portion of the probe oligonucleotide.

8. The nucleic acid assay of claim 1 wherein the disassociating agent is selected from the group consisting of a Lewis base, a Lewis acid, a nuclease, a restriction enzyme, a recombinase, a ligase, a transferase, a polymerase, a phosphatase, a chaperonin and combinations thereof.

9. The nucleic acid assay of claim 1 further comprising:

at least one secondary reaction substrate having binding sites for receiving the disassociated second probe nucleotide portion of the probe oligonucleotide;

at least one reporter oligonucleotide having a first reporter nucleotide portion for binding to a portion of the secondary reaction substrate and a second probe nucleotide portion which does not bind to the secondary reaction substrate; and

a second disassociating agent for disassociating a second reporter nucleotide portion of the reporter oligonucleotide from the first reporter nucleotide portion upon the concurrent binding of the disassociated second probe nucleotide portion of the probe oligonucleotide to a binding site of the secondary reaction substrate and the first reporter nucleotide portion to a portion of the secondary reaction substrate.

10. The nucleic acid assay of claim 9 wherein the reporter oligonucleotide includes a second label for generating a detectable signal upon the disassociation of the second reporter nucleotide portion from the first reporter nucleotide portion thereof.

11. The nucleic acid assay of claim 10 wherein the second label of the reporter oligonucleotide is selected from the group consisting of fluorescent dyes, fluorescein, rhodamine, cyanine dyes, Alexa dyes, fluorescent dye phosphoramidites, radioactive isotopes and combinations thereof.

12. The nucleic acid assay of claim 10 wherein the second label is operatively associated with the first reporter nucleotide portion of the reporter oligonucleotide.

13. The nucleic acid assay of claim 12 wherein the second label is attached to the first reporter nucleotide portion of the reporter oligonucleotide in operative association with a quencher attached to the second reporter nucleotide portion of the reporter oligonucleotide.

14. The nucleic acid assay of claim 10 wherein the second label is operatively associated with the second reporter nucleotide portion of the reporter oligonucleotide.

15. The nucleic acid assay of claim 14 wherein the second label is attached to the second reporter nucleotide portion of the reporter oligonucleotide in operative association with a quencher attached to the first reporter nucleotide portion of the reporter oligonucleotide.

16. The nucleic acid assay of claim 9 wherein the first and seconddisassociating agents are the same.

17. The nucleic acid assay of claim 9 wherein the detection means is further capable of detecting the degree to which the second reporter nucleotide portion of the reporter oligonucleotide has disassociated from the first reporter nucleotide portion thereof.

18. The nucleic acid assay of claim 1 wherein the matrix comprises at least three single-stranded nucleic acid molecules held in close association in a dimensionally ordered arrangement.

19. The nucleic assay of claim 1 wherein the matrix is a member selected from the group consisting of nucleic acid dendrimer, hyperbranched architecture molecules, regular lattice molecules, and combinations of thereof.

20. The nucleic assay of claim 19 wherein the matrix is a nucleic acid dendrimer.

21. The nucleic acid assay of claim 1 wherein the matrix is affixed to a support substrate.

22. A method of detecting the presence of a specific sample nucleic acid sequence in a sample suspected of containing the same, said method comprising the steps of:

contacting the sample with a matrix comprising at least one first site with an invader oligonucleotide having an invader nucleic acid sequence for binding to a first portion of the specific sample nucleic acid sequence, and at least one second site with a probe oligonucleotide having a first probe nucleotide portion for binding to a second portion of the specific sample nucleic acid sequence and a second probe nucleotide portion which does not bind to the specific sample nucleic acid sequence to yield a sample-matrix mixture;

treating the sample-matrix mixture at a temperature and for a time sufficient to induce the invader oligonucleotide to bind to the first portion of the specific sample nucleic acid sequence and to induce the first probe nucleotide portion of the probe oligonucleotide to bind to the second portion of the specific sample nucleic acid sequence to yield a hybridization complex;

contacting the hybridization complex with a disassociating agent wherein the disassociating agent disassociates the second probe nucleotide portion from the first probe nucleotide portion thereof; and

detecting the degree to which the second probe nucleotide portion of the probe oligonucleotide has disassociated from the first probe nucleotide portion thereof.

23. The method of claim 22 wherein the probe oligonucleotide includes a label for generating a detectable signal upon the disassociation of the second probe nucleotide portion from the first probe nucleotide portion thereof.

24. The method of claim 23 wherein the label is operatively associated with the first probe nucleotide portion of the probe oligonucleotide.

25. The method of claim 24 wherein the label is attached to the first probe nucleotide portion of the probe oligonucleotide in operative association with a quencher attached to the second probe nucleotide portion of the probe oligonucleotide.

26. The method of claim 23 wherein the label is operatively associated with the second probe nucleotide portion of the probe oligonucleotide.

27. The method of claim 26 wherein the label is attached to the first probe nucleotide portion of the probe oligonucleotide in operative association with a quencher attached to the first probe nucleotide portion of the probe oligonucleotide.